



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,892	09/29/2003	Eric A. Jacobsen	884.A54US1	6138

21186 7590 04/04/2007
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
----------	--------------

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/675,892

Applicant(s)

JACOBSEN ET AL.

Examiner

Pankaj Kumar

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-20 is/are allowed.
- 6) ☒ Claim(s) 1,10,11,21,25 and 28 is/are rejected.
- 7) ☒ Claim(s) 2-9,12-14,22-24,26,27,29 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because:
 - a. It is too short as it needs to be between 50 and 150 words.
 - b. The title of the invention should be removed from the abstract.
2. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 10, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Leung USPN 7,124,193.
5. As per claim 1, Leung teaches a method comprising selecting a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) based on measured channel conditions (Leung col.

Art Unit: 2611

3 lines 42-43: according to the channel and interference conditions) to achieve a performance level for communications (Leung col. 3 lines 61-62: “achieving a desirable performance”) over a symbol-modulated subcarrier communication channel (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive TDMA frames). Depending on the transmission mode, the number of information bits varies from one block to another”; paragraph 32: “available spectrum is divided into 3 frequency sets”; paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”).

6. As per claim 10, Leung teaches the method of claim 1 wherein the communication channel comprises a plurality of individual symbol-modulated subcarriers (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive TDMA frames). Depending on the transmission mode, the number of information bits varies from one block to another”; paragraph 32: “available spectrum is divided into 3 frequency sets”; paragraph 16: subband “With AAC, the audio stream

Art Unit: 2611

is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold”), and wherein the selecting comprises selecting modulation rates for the individual subcarriers based on the measured channel conditions (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions”).

7. As per claim 28, Leung teaches selecting a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) based on measured channel conditions (Leung col. 3 lines 42-43: according to the channel and interference conditions) to achieve a performance level for communications (Leung col. 3 lines 61-62: “achieving a desirable performance”) over a symbol-modulated subcarrier communication channel (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive TDMA frames). Depending on the transmission mode, the number of information bits varies

Art Unit: 2611

from one block to another”; paragraph 32: “available spectrum is divided into 3 frequency sets”; paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung in view of Dafesh USPN 7120198.

10. As per claim 11, Leung teaches the method of claim 10 with selecting the subcarrier modulation assignments as discussed above. Leung does not teach selecting one of no modulation, BPSK modulation, QPSK modulation, 8-PSK modulation, 16-QAM, 32-QAM, 64-QAM, 128-QAM and 256-QAM for the individual subcarriers of the communication channel. Dafesh teaches selecting one of no modulation, BPSK modulation, QPSK modulation, 8-PSK modulation, 16-QAM, 32-QAM, 64-QAM, 128-QAM and 256-QAM for the individual subcarriers of the communication channel (Dafesh paragraph 25: “By appropriate choice of the modulation index m for sine-wave QPSM, most of the usable power in the subcarrier waveform is transmitted”). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Dafesh into Leung since Leung suggests

Art Unit: 2611

subcarrier modulation (something broad) in general and Dafesh suggests the beneficial use of selecting modulation such as to transmit most of usable power (Dafesh paragraph 25) in the analogous art of communication.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung in view of Cannella USPN 5668810.

12. As per claim 21, Leung teaches an application controller to determine a desired performance level (Leung col. 3 line 54: “achieve a target error probability”; col. 3 line 53: SINR) for an application (Leung col. 3 line 54: “achieve a target error probability needed for the music service”) and data type (Leung col. 3: MPEG-4, 8 slots per GSM TDMA frame, 65kbps, 11kbps); and a physical layer (Leung teaches physical layer but does not teach that the physical layer selects transmit power level but it would be obvious as explained below) to select a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold”; paragraph 32: “available spectrum is divided into 3 frequency sets”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) for receipt of data over a communication channel at the desired performance level (Leung col. 3 lines 61-62: “achieving a desirable performance”; col. 3 line 54: “achieve a target error probability needed for the music service”; error would inherently occur over the communication channel at the receiver due to various factors such as noise).

Art Unit: 2611

13. Leung teaches physical layer but does not teach that the physical layer selects transmit power level and modulation. Cannella 5668810 teaches physical layer selects transmit power level and modulation (Cannella 5668810 col. 4 lines 39-41 “Cabling, connectors, signal level, modulation scheme, and bandwidth are determined in the physical layer 120 by the user for a particular application of the present protocol”). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Cannella into Leung since Leung suggests physical layer (something broad) in general and Cannella suggests the beneficial use of physical layer selecting transmit power level and modulation such as for a user to apply such controls based on a particular application (Cannella 5668810 col. 4 lines 39-41 “Cabling, connectors, signal level, modulation scheme, and bandwidth are determined in the physical layer 120 by the user for a particular application of the present protocol”) in the analogous art of communication.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung in view of Doynov US 2002/0163495.

15. As per claim 25, Leung teaches a omnidirectional antenna (not in Leung but would be obvious as explained below) to receive communications over a symbol-modulated subcarrier communication channel (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive

Art Unit: 2611

TDMA frames). Depending on the transmission mode, the number of information bits varies from one block to another.”; paragraph 32: “available spectrum is divided into 3 frequency sets”; paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”; col. 1 line 60: receiver; col. 2 line 25; col. 5 line 47; col. 7 line 37, 39); a physical layer coupled with the antenna (not in Leung but would be obvious as explained below) to select a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) based on channel conditions (Leung col. 3 lines 42-43: according to the channel and interference conditions) to achieve a performance level (Leung col. 3 lines 61-62: “achieving a desirable performance”); and an application controller to determine the performance level (Leung col. 3 line 54: “achieve a target error probability”; col. 3 line 53: SINR) based on an application (Leung col. 3 line 54: “achieve a target error probability needed for the music service”) and data type (Leung col. 3: MPEG-4, 8 slots per GSM TDMA frame, 65kbps, 11kbps).

16. Leung does not teach omnidirectional antenna and physical layer coupled with the antenna. Doynov teaches omnidirectional antenna (Doynov paragraph 12) and physical layer coupled with the antenna (Doynov claim 5). Thus, it would have been obvious to one of

Art Unit: 2611

ordinary skill in the art at the time of the invention was made to implement the teachings of Doynov into Leung since Leung suggests transmission and physical layer (something broad) in general and Doynov suggests the beneficial use of omnidirectional antenna for transmission and physical layer coupled with the antenna such as for processing communication in all directions in the analogous art of communication.

Allowable Subject Matter

17. Claims 15-20 are allowed.

18. Claims 2-9, 12-14, 22-24, 26-27, 29-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with:

20. As per claims 15-20: evaluating based on characteristics of the received communication signal for various packet error rates, various subcarrier modulation assignments and fragment sizes to determine potential link data rates; and selecting one of the subcarrier modulation assignments and fragment sizes based on the potential link data rate to achieve a desired link data rate.

Art Unit: 2611

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Pankaj Kumar
Primary Examiner
Art Unit 2611

PK